10CFR50.73

Virginia Electric and Power Company
North Anna Power Station
P. O. Box 402
Mineral, Virginia 23117

August 4, 2004

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555-0001

Serial No.: 04-417
NAPS: JHL
Docket No.: 50-339
License No.: NPF-7

Dear Sirs:

Pursuant to 10CFR50.73, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Power Station Unit 2.

Report No. 50-339/2004-004-00

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to the Management Safety Review Committee for its review.

Sincerely,

J. M. Davis, Site Vice President
North Anna Power Station

Enclosure

Commitments contained in this letter: None

cc: United States Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303-8931

Mr. M. T. Widmann
NRC Senior Resident Inspector
North Anna Power Station

IE22

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 6-30-2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0066), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
NORTH ANNA POWER STATION , UNIT 2	05000 339	1 OF 5

4. TITLE

Reactor Trip Due to Incorrect Cell Switch Contact Configuration on Bypass Reactor Trip Breaker

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCUMENT NUMBER
06	10	2004	2004	-- 004 --	00	08	04	2004		05000
									FACILITY NAME	DOCUMENT NUMBER 05000

9. OPERATING MODE	1
10. POWER LEVEL	100%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)	X	50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		
	20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
J. M. Davis, Site Vice President	(540) 894-2101

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
E	JD	BKR	W120	Y						

14. SUPPLEMENTAL REPORT EXPECTED		15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
YES (If yes, complete 15. EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On June 10, 2004, at 1313 hours, with North Anna Unit 2 operating at 100 percent power (Mode 1), an automatic reactor trip occurred during performance of 2-PT-36.1A (Train A Reactor Protection and ESF Logic Actuation Logic Test). An incorrect contact configuration in the cell switch for "A" Bypass Reactor Trip Breaker caused the event. The incorrect contact configuration created a Turbine Trip Signal which, in turn, resulted in a Reactor Trip Signal. At 1611 hours, a 4-hour Non-Emergency Report was made to the NRC in accordance with 10CFR50.72(b)(2)(iv)(B). An 8 hour Non-Emergency Report was also made in accordance with 10CFR50.72(b)(3)(iv)(A) due to actuation of the Auxiliary Feedwater System. This event is reportable pursuant to 10CFR50.73(a)(2)(iv) for a condition that resulted in an automatic actuation of any engineered safety feature including the reactor protection system. The cell switch contact configurations for the Unit 2 Bypass Reactor Trip Breakers were corrected. No significant safety implications existed because the Solid State Protection System was fully capable of tripping the reactor if required.

1.0 DESCRIPTION OF THE EVENT

On June 10, 2004, at 1313 hours, with North Anna Unit 2 operating at 100% power (Mode 1), an automatic reactor trip occurred during performance of 2-PT-36.1A (Train A Reactor Protection and ESF Logic Actuation Logic Test). An incorrect contact configuration on the recently replaced cell switch (EIIS Component HS) (52H contact) for "A" Bypass Reactor Trip Breaker (EIIS System JD, Component BKR) caused the event. The incorrect contact configuration created a turbine trip signal when the "A" Reactor Trip Breaker was opened during the performance of 2-PT-36.1A. The turbine trip resulted in a reactor trip signal.

The cell switches (eight total, two per each breaker) for both the Reactor Trip Breakers and the Bypass Reactor Trip Breakers were inspected during the May 2004 Unit 2 refueling outage. The cell switch inspection determined that based on the general condition and age of the cell switches (original installation) the reliability of the cell switches could be improved if they were replaced. The cell switches were subsequently replaced in the Unit 2 Reactor Trip Breakers and Bypass Reactor Trip Breakers during the refueling outage. Periodic Tests 2-PT-36.1A and 2-PT-36.1B were satisfactorily performed prior to the Unit 2 startup. However, with Unit 2 in Mode 5 and the turbine already in a tripped condition, the turbine trip signal was not apparent since the annunciator window does not have re-flash capability. Additionally, the post-maintenance testing did not test all the cell switch contacts that are used. The procedures used for post-maintenance testing were performed satisfactorily, but the procedure only checked one set of cell switch contacts that provide a P-4 input to the Solid State Protection System (EIIS System JG).

Each cell switch contains four separate contacts that can be configured as being normally open or normally closed. The original equipment manufacturer (OEM) provides the replacement cell switches in only one configuration, two normally open and two normally closed contacts. The configuration of two normally open and two normally closed contacts is the correct configuration for both of the cell switches for the "A" and "B" Reactor Trip Breakers and for the left side (as viewed from the front) cell switches for the "A" and "B" Bypass Reactor Trip Breakers. However, the right side cell switches for the Reactor Trip Bypass Breakers use a contact configuration of one normally open and three normally closed contacts. With a normally open contact now in place of a normally closed contact, the Turbine Trip logic was satisfied during the performance of 2-PT-36.1A when the "A" Bypass Reactor Trip Breaker is closed and "A" Reactor Trip Breaker is opened.

Control room personnel responded to the event in accordance with emergency procedure E-0, Reactor Trip or Safety Injection. The control room team stabilized the plant using ES-0.1 Reactor Trip recovery. The lowest Reactor Coolant System (RCS) (EIIS System AB) pressure during the event was 1988 psig and the lowest RCS temperature was 549

degrees.

A non-emergency four-hour report was made to the NRC Operations Center at 1611 hours pursuant to 10 CFR 50.72(b)(2)(iv)(B) for an actuation of the Reactor Protection System while critical. An eight-hour report was also made to the NRC in accordance with 10 CFR 50.72(b)(3)(iv)(A) for an event causing actuation of the Auxiliary Feedwater System (EIIS System BA). The Reactor Protection System, accident mitigation system actuation circuitry (AMSAC), and the Auxiliary Feedwater System operated properly in response to the event. During the Unit 2 reactor trip, a blown output fuse (EIIS Component FU) on a logic card (that feeds the permissive for arming the Steam Dumps from loss of load) prevented the Main Steam Dump Valves (EIIS System SB, Component TCV) from opening in Tavg Mode as expected. The Steam Generator Power Operated Relief Valves (PORVs) (EIIS Component RV) lifted and operated to control RCS temperature until transferring Steam Dump control to the Steam Pressure Mode. The fuse was replaced.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

This event posed no significant safety implications because the Reactor Protection and Engineered Safety Features Systems (EIIS System JE) functioned as designed following the reactor trip. The post trip response progressed as expected and the plant was stabilized. Therefore, the health and safety of the public were not affected by this event.

This event is reportable pursuant to 10CFR50.73(a)(2)(iv) for a condition that resulted in an automatic actuation of any engineered safety feature including the reactor protection system.

3.0 CAUSE

A root cause evaluation of the event is in progress. The event appears to be caused by inadequate work practices. The "as found" cell switch contact configuration was not verified at any time during the replacement process. The difference in contact configuration for the right side cell switches for the "A" and "B" Bypass Reactor Trip Breakers was not recognized during the cell switch replacement process.

Several contributing causes were identified upon review of the event. These contributing causes are discussed below.

Interface Design – Uniqueness of Design Not Made Apparent or Emphasized:
Due to the fact that all of the cell switches supplied by the OEM come with one standard contact configuration (two normally open and two normally closed contacts), it was not recognized that the contact configuration could be changed. Nor was it recognized that there could be differences between the cell switch configuration on each of the associated

Reactor Trip or Bypass Breakers. Information on how to change the cell switch contact configuration is provided in the Vendor Technical Manual (VTM) for Reactor Trip and Bypass Breakers but is not obvious at first inspection. The switch information is listed under the section of the VTM for breaker auxiliary switches, because the auxiliary switches and the cell switches are identical parts. The cell switches (designated as 52H) are located in the back of the breaker cubicle and change state when the breaker is racked in. The auxiliary switches (designated as 52a or 52b) are located on the breaker itself and change state when the breaker operates.

Training/Qualification – Insufficient Practice or Hands On Experience:
Review of plant history showed that this is the first time cell switches have been changed out at North Anna. No specific training had been provided prior to this evolution. Station personnel interviewed were not aware that the contact configuration of the cell switches could be changed or that the left and right side cell switch configurations in Bypass Breaker cubicles were different.

Maintenance/Testing – Inadequate Post-Maintenance/Modification Testing (PMT):
The PMT called for in the work order package did not test all of the cell switch contacts following replacement. The procedure used, 2-EPM-0311-01, Testing of Cell Switch on Reactor Trip and Bypass Breakers, only tests one cell switch contact from a cell switch on the Reactor Trip Breaker and one from the Bypass Breaker. The Reactor Trip Breakers use four contacts out of the available eight while the Bypass Breakers use seven out of the eight available contacts.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

Control room personnel responded to the event in accordance with emergency procedure E-0, Reactor Trip or Safety Injection. The control room team stabilized the plant using ES-0.1 Reactor Trip recovery.

5.0 ADDITIONAL CORRECTIVE ACTIONS

The right side cell switch contact configuration for the Unit 2 "A" and "B" Bypass Reactor Trip Breakers was changed to match plant drawings. Post- Maintenance testing was then performed to verify the correct contact and circuit operation.

The contacts on the Unit 2 Reactor Trip Breaker and Bypass Breaker cell switches were verified to be in the correct configuration.

Cell switches that were currently in stock were checked to determine if there were any part number or contact configuration differences. All cell switches that were found had the same stock number as well as the same contact configuration of two normally open and two normally closed contacts.

Contact was made with the OEM to confirm that cell switches are delivered with only one configuration (two normally closed and two normally open contacts per switch).

The work order packages for the Unit 1 Reactor Trip and Bypass Breaker cell switch replacements were revised to include steps that verify contact configuration of the cell switches. This work is scheduled to be performed during the Fall 2004 Unit 1 refueling outage.

It was verified that the cell switches are only used in the Reactor Trip and Bypass Reactor Trip Breakers.

6.0 ACTIONS TO PREVENT RECURRENCE

A procedure that has specific instructions on how to replace the Reactor Trip and Bypass Breaker cell switches will be created prior to any additional cell switch maintenance. The procedure will include steps on how to reconfigure the cell switch contacts as well as provide specific acceptance criteria for testing all contacts upon completion of the replacement process.

Additional actions to address the contributing causes for the event are being evaluated. Upon management approval, corrective actions will be tracked to completion in the Corrective Action System.

7.0 SIMILAR EVENTS

None

8.0 ADDITIONAL INFORMATION

At the time of this event North Anna Unit 1 was operating at 100 percent power and was not affected by this event. The work order packages for the Unit 1 Reactor Trip and Bypass Breaker cell switch replacements were revised to include steps that verify contact configuration of the cell switches.

Component Information:
Manufacturer: Westinghouse Electric Corporation
Description: Reactor Trip and Bypass Breakers
Model No.: DB-50